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Customer	
Customer model name	
Customer panel code	
BV model name	T550HVN01.6
Description	LED model, 55inches, FHD, 120Hz
Issue date	2012/09/03
Revision	00

( )Preliminary Specifications
(＊)Final Specifications

Customer signature	Date	BriView	date
Approved by		Approval by	
Note		Reviewed by	
		Prepared by	

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Record of Revision

Version	Date	Page	Description
0.0	2012/09/03		First release

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1. General Description

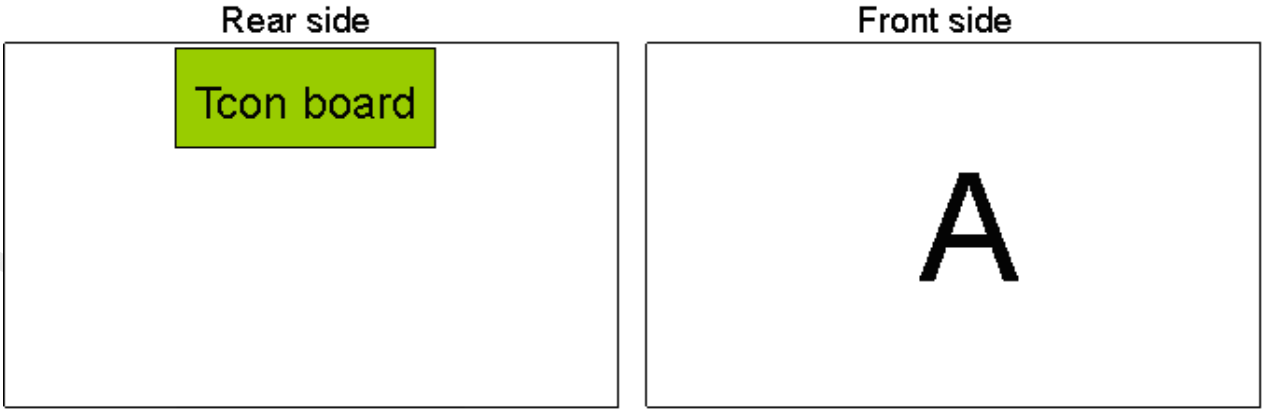
This specification applies to the 54.6 inch Color TFT-LCD SKD model T550HVN01.6. This LCD Open Cell Unit has a TFT active matrix type liquid crystal panel 1,920x1,080 pixels, and diagonal size of 54.6 inch. This Open Cell Unit supports 1,920x1,080 mode. Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale or the brightness of the sub-pixel color is determined with a 10-bit gray scale signal for each dot.

*** General Information**

Items	Specification	Unit	Note
Active Screen Size	54.6	inch	
Display Area	1209.6(H) x 680.4(V)	mm	
Outline Dimension	1228.8(H) x 699.4(V) x 1.3(D)	mm	D: cell thickness
Driver Element	a-Si TFT active matrix		
Display Colors	10 bit, 1073.7M	Colors	
Number of Pixels	1,920x1,080	Pixel	
Pixel Pitch	0.21 (W) x 0.63(H)	mm	
Pixel Arrangement	RGB vertical stripe		
Display Operation Mode	Normally Black		
Surface Treatment	Anti-Glare, 3H		Haze=2%
Rotate Function	Unachievable		Note 1

Note 1: Rotate Function refers to LCD display could be able to rotate.

Note 2: LCD display as below illustrated when signal input with “A”.



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2. Absolute Maximum Ratings

The followings are maximum values which, if exceeded, may cause faulty operation or damage to the unit

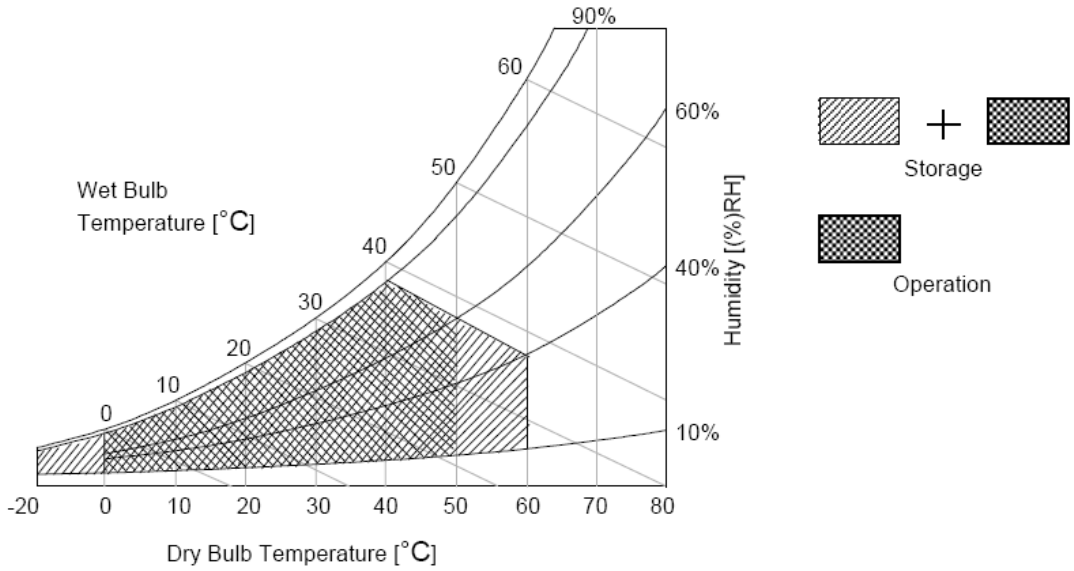
Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive Voltage	Vcc	-0.3	14	[Volt]	Note 1
Input Voltage of Signal	Vin	-0.3	4	[Volt]	Note 1
Operating Temperature	TOP	0	+50	[°C]	Note 2
Operating Humidity	HOP	10	90	[%RH]	Note 2
Storage Temperature	TST	-20	+60	[°C]	Note 2
Storage Humidity	HST	10	90	[%RH]	Note 2
Panel Surface Temperature	PST		65	[°C]	Note 3

Note 1: Duration:50 msec.

Note 2 : Maximum Wet-Bulb should be 39℃ and No condensation.

The relative humidity must not exceed 90% non-condensing at temperatures of 40℃ or less. At temperatures greater than 40℃, the wet bulb temperature must not exceed 39℃.

Note 3: Surface temperature is measured at 50℃ Dry condition



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3. Electrical Specification

The T550HVN01.6 Open Cell Unit requires power input which is employed to power the LCD electronics and to drive the TFT array and liquid crystal.

3.1 Electrical Characteristics

3.1.1: DC Characteristics

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max		
LCD							
Power Supply Input Voltage		V_{DD}	10.8	12	13.2	V_{DC}	
Power Supply Input Current		I_{DD}	--	1.68	2.5	A	1
Power Consumption		P_C	--	20.16	30	Watt	1
Inrush Current		I_{RUSH}	--	--	4	A	2
Permissible Ripple of Power Supply Input Voltage		V_{RP}	--	--	V_{DD} * 5%	mV_{pk-pk}	3
LVDS Interface	Input Differential Voltage	$\|V_{ID}\|$	200	400	600	mV_{DC}	4
	Differential Input High Threshold Voltage	V_{TH}	+100	--	+300	mV_{DC}	4
	Differential Input Low Threshold Voltage	V_{TL}	-300	--	-100	mV_{DC}	4
	Input Common Mode Voltage	V_{ICM}	1.1	1.25	1.4	V_{DC}	4
CMOS Interface	Input High Threshold Voltage	V_{IH} (High)	2.7	--	3.3	V_{DC}	5
	Input Low Threshold Voltage	V_{IL} (Low)	0	--	0.6	V_{DC}	5

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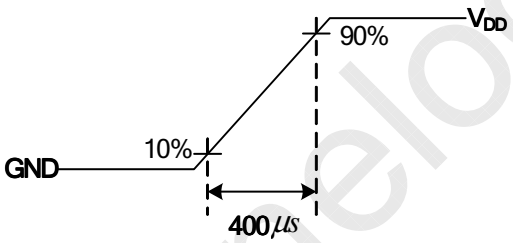
3.1.2: AC Characteristics

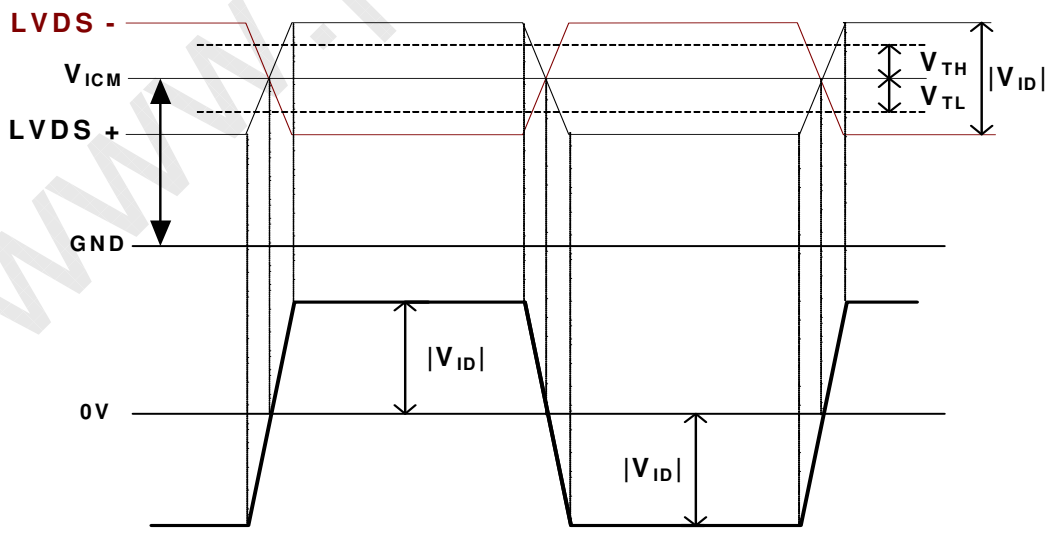
Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max		
LVDS Interface	Input Channel Pair Skew Margin	$t_{SKEW\ (CP)}$	-500	--	+500	ps	6
	Receiver Clock : Spread Spectrum Modulation range	Fclk_ss	Fclk -3%	--	Fclk +3%	MHz	7
	Receiver Clock : Spread Spectrum Modulation frequency	Fss	30	--	200	KHz	7
	Receiver Data Input Margin Fclk = 85 MHz Fclk = 65 MHz	tRMG	 -0.4 -0.5	 -- --	 0.4 0.5	ns	8

Note :

1. V_{DD} = 12.0V, Fv = 120Hz, Fclk= Max freq., 25 ℃, Test Pattern : White Pattern
2. Measurement condition : Rising time = 400us



3. Test Condition:
   (1) The measure point of V_{RP} is in LCM side after connecting the System Board and LCM.
   (2) Under Max. Input current spec. condition.
4. V_{ICM} = 1.25V



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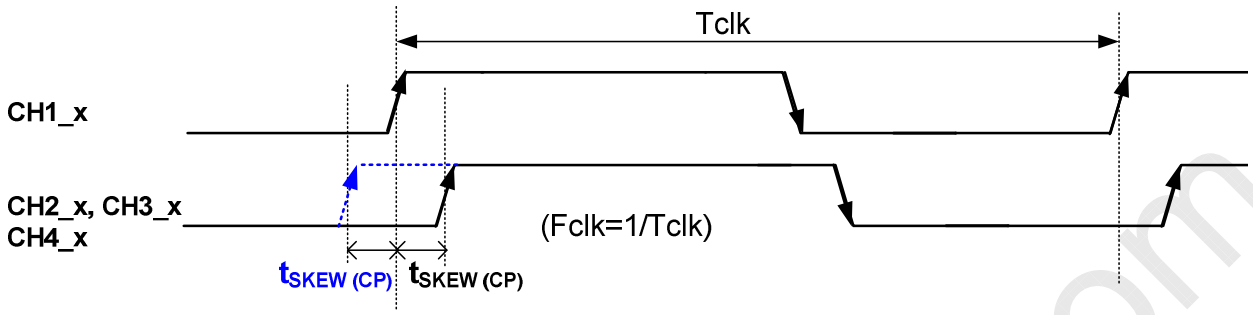
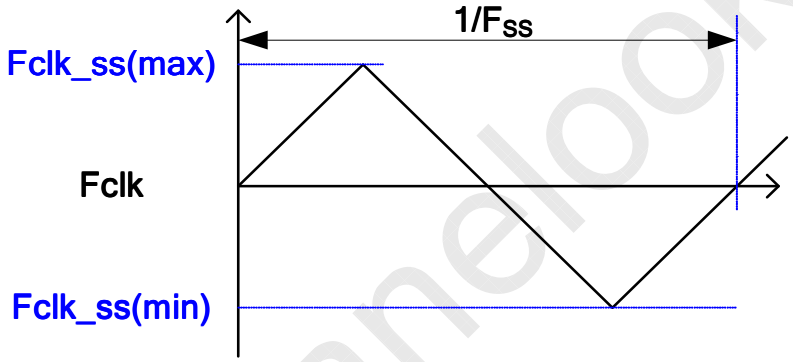
5. The measure points of V_{IH} and V_{IL} are in LCM side after connecting the System Board and LCM.
6. Input Channel Pair Skew Margin



Note: x = 0, 1, 2, 3, 4

7. LVDS Receiver Clock SSCG (Spread spectrum clock generator) is defined as below figures



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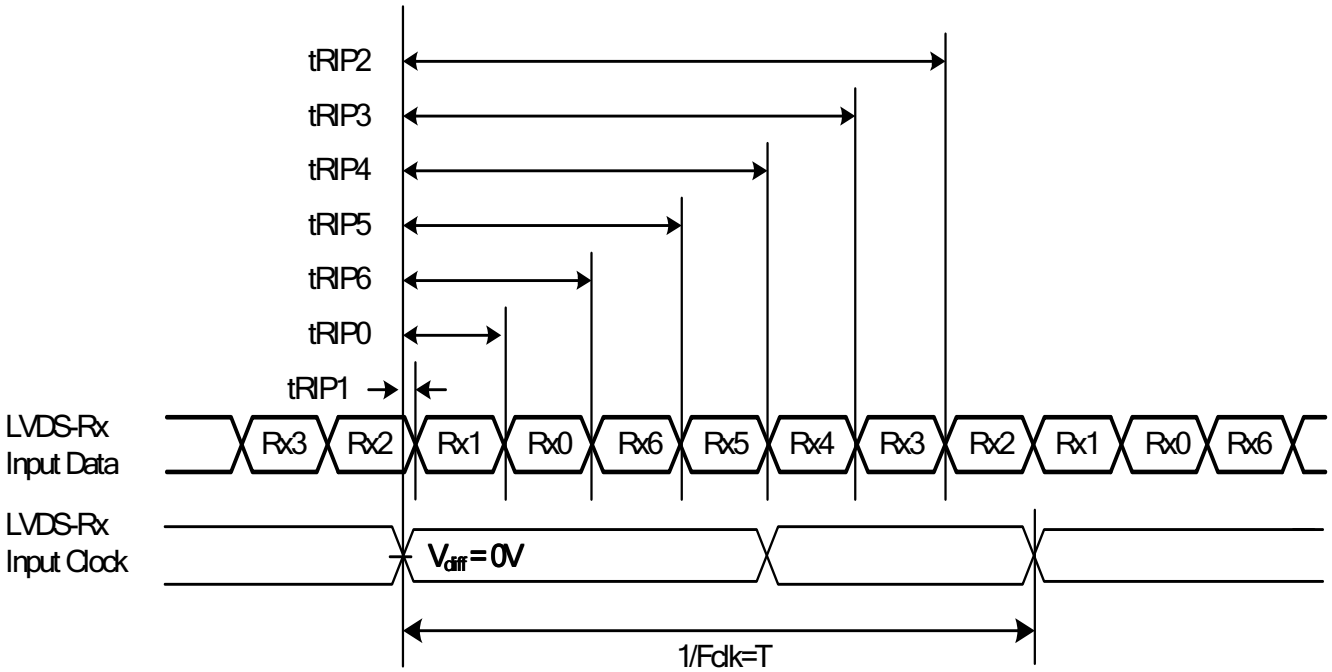
8. Receiver Data Input Margin

Parameter	Symbol	Rating			Unit	Note
		Min	Type	Max		
Input Clock Frequency	Fclk	Fclk (min)	--	Fclk (max)	MHz	**T=1/Fclk**
Input Data Position0	tRIP1	-|tRMG|	0	|tRMG|	ns	
Input Data Position1	tRIP0	T/7-|tRMG|	T/7	T/7+|tRMG|	ns	
Input Data Position2	tRIP6	2T/7-|tRMG|	2T/7	2T/7+|tRMG|	ns	
Input Data Position3	tRIP5	3T/7-|tRMG|	3T/7	3T/7+|tRMG|	ns	
Input Data Position4	tRIP4	4T/7-|tRMG|	4T/7	4T/7+|tRMG|	ns	
Input Data Position5	tRIP3	5T/7-|tRMG|	5T/7	5T/7+|tRMG|	ns	
Input Data Position6	tRIP2	6T/7-|tRMG|	6T/7	6T/7+|tRMG|	ns	



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3.2 Interface Connections

- Type: ‘’ECHO-FS” FRC

  LCD connector: FI-RE51S-HF (JAE, LVDS connector)

PIN	Symbol	Description	PIN	Symbol	Description
1	V_{DD}	Power Supply, +12V DC Regulated	26	CH2_0+	LVDS Channel 2, Signal 0+
2	V_{DD}	Power Supply, +12V DC Regulated	27	CH2_1-	LVDS Channel 2, Signal 1-
3	V_{DD}	Power Supply, +12V DC Regulated	28	CH2_1+	LVDS Channel 2, Signal 1+
4	V_{DD}	Power Supply, +12V DC Regulated	29	CH2_2-	LVDS Channel 2, Signal 2-
5	V_{DD}	Power Supply, +12V DC Regulated	30	CH2_2+	LVDS Channel 2, Signal 2+
6	Dimming_4	Dimming_4	31	GND	Ground
7	GND	Ground	32	CH2_CLK-	LVDS Channel 2, Clock -
8	GND	Ground	33	CH2_CLK+	LVDS Channel 2, Clock +
9	GND	Ground	34	GND	Ground
10	CH1_0-	LVDS Channel 1, Signal 0-	35	CH2_3-	LVDS Channel 2, Signal 3-
11	CH1_0+	LVDS Channel 1, Signal 0+	36	CH2_3+	LVDS Channel 2, Signal 3+
12	CH1_1-	LVDS Channel 1, Signal 1-	37	CH2_4-	LVDS Channel 2, Signal 4-
13	CH1_1+	LVDS Channel 1, Signal 1+	38	CH2_4+	LVDS Channel 2, Signal 4+
14	CH1_2-	LVDS Channel 1, Signal 2-	39	GND	Ground
15	CH1_2+	LVDS Channel 1, Signal 2+	40	SCL	EEPROM Serial Clock
16	GND	Ground	41	REF_Sync	REF_Sync
17	CH1_CLK-	LVDS Channel 1, Clock -	42	BT_SYNC_OUT	BT_SYNC_OUT
18	CH1_CLK+	LVDS Channel 1, Clock +	43	TCON_I2C_SW	High(3.3V) for Writable, Low(GND) for Protection
19	GND	Ground	44	SDA	EEPROM Serial Data
20	CH1_3-	LVDS Channel 1, Signal 3-	45	Dimming_2	Dimming_2
21	CH1_3+	LVDS Channel 1, Signal 3+	46	Dimming_3	Dimming_3
22	CH1_4-	LVDS Channel 1, Signal 4-	47	FRC_SCL	FRC_SCL
23	CH1_4+	LVDS Channel 1, Signal 4+	48	Dimming_1	Dimming_1
24	GND	Ground	49	FRC_SDA	FRC_SDA
25	CH2_0-	LVDS Channel 2, Signal 0-	50	Main_Check_LVDS	Main_Check_LVDS
			51	Aging_EN	Aging pattern control High(3.3V) : Aging Enable Open/Low(GND) : Aging Disable

Note: N.C. : please leave this pin unoccupied. It can not be connected by any signal (Low/GND/High).

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■ Type: "F-LED" FRC

LCD connector: FI-RE51S-HF (JAE, LVDS connector)

PIN	Symbol	Description	PIN	Symbol	Description
1	V_{DD}	Power Supply, +12V DC Regulated	26	CH2_0+	LVDS Channel 2, Signal 0+
2	V_{DD}	Power Supply, +12V DC Regulated	27	CH2_1-	LVDS Channel 2, Signal 1-
3	V_{DD}	Power Supply, +12V DC Regulated	28	CH2_1+	LVDS Channel 2, Signal 1+
4	V_{DD}	Power Supply, +12V DC Regulated	29	CH2_2-	LVDS Channel 2, Signal 2-
5	V_{DD}	Power Supply, +12V DC Regulated	30	CH2_2+	LVDS Channel 2, Signal 2+
6	N.C.	No connection	31	GND	Ground
7	GND	Ground	32	CH2_CLK-	LVDS Channel 2, Clock -
8	GND	Ground	33	CH2_CLK+	LVDS Channel 2, Clock +
9	GND	Ground	34	GND	Ground
10	CH1_0-	LVDS Channel 1, Signal 0-	35	CH2_3-	LVDS Channel 2, Signal 3-
11	CH1_0+	LVDS Channel 1, Signal 0+	36	CH2_3+	LVDS Channel 2, Signal 3+
12	CH1_1-	LVDS Channel 1, Signal 1-	37	CH2_4-	LVDS Channel 2, Signal 4-
13	CH1_1+	LVDS Channel 1, Signal 1+	38	CH2_4+	LVDS Channel 2, Signal 4+
14	CH1_2-	LVDS Channel 1, Signal 2-	39	GND	Ground
15	CH1_2+	LVDS Channel 1, Signal 2+	40	**SCL**	**EEPROM Serial Clock**
16	GND	Ground	41	**Update_check**	**Update_check**
17	CH1_CLK-	LVDS Channel 1, Clock -	42	**BT_SYNC**	**BT_SYNC**
18	CH1_CLK+	LVDS Channel 1, Clock +	43	**TCON_I2C_SW**	**High(3.3V) for Writable, Low(GND) for Protection**
19	GND	Ground	44	**SDA**	**EEPROM Serial Data**
20	CH1_3-	LVDS Channel 1, Signal 3-	45	**Dimming_2**	**Dimming_2**
21	CH1_3+	LVDS Channel 1, Signal 3+	46	**FRC_RESET**	**FRC_RESET**
22	CH1_4-	LVDS Channel 1, Signal 4-	47	**FRC_SCL**	**FRC_SCL**
23	CH1_4+	LVDS Channel 1, Signal 4+	48	**Dimming_1**	**Dimming_1**
24	GND	Ground	49	**FRC_SDA**	**FRC_SDA**
25	CH2_0-	LVDS Channel 2, Signal 0-	50	**Main_Check_LVDS**	**Main_Check_LVDS**
			51	**Aging_EN**	**Aging pattern control High(3.3V) : Aging enable Open/Low(GND) : Aging disable**

Note: N.C. : please leave this pin unoccupied. It can not be connected by any signal (Low/GND/High).

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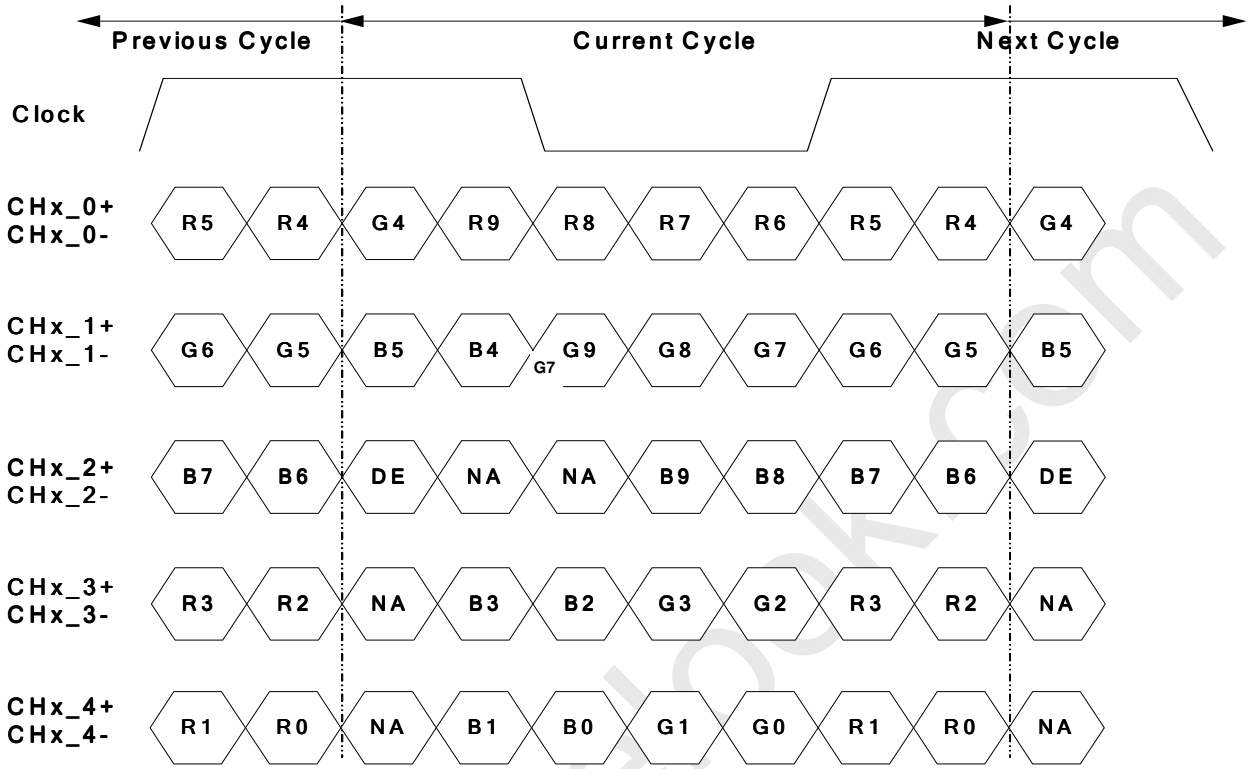
■ **LVDS Option = Only JEIDA for "ECHO-FS" FRC Type and "F-LED" FRC Type**



Note: x = 1, 2, 3, 4…

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3.3 Signal Timing Specification

This is the signal timing required at the input of the user connector. All of the interface signal timing should be satisfied with the following specifications for its proper operation.

Timing Table (DE only Mode) for SEC FRC Input

Signal	Item	Symbol	Type	Type	Unit
Vertical Section	Period	Tv	1125	1125	Th
	Active	Tdisp (v)	1080	1080	
	Blanking	Tblk (v)	45	45	Th
Horizontal Section	Period	Th	1100	1320	Tclk
	Active	Tdisp (h)	960		
	Blanking	Tblk (h)	140	360	Tclk
Clock	Frequency	Fclk=1/Tclk	74.25	74.25	MHz
Vertical Frequency	Frequency	Fv	60	50	Hz
Horizontal Frequency	Frequency	Fh	67.5	56.25	KHz

Timing Table (DE only Mode) for AUO Tcon Input

Signal	Item	Symbol	Min.	Typ.	Max	Unit
Vertical Section	Period	Tv	1096	1130	1392	Th
	Active	Tdisp (v)		1080		
	Blanking	Tblk (v)	16	50	312	Th
Horizontal Section	Period	Th	520	570	580	Tclk
	Active	Tdisp (h)		480		
	Blanking	Tblk (h)	40	90	100	Tclk
Clock	Frequency	Fclk=1/Tclk	64.8	77.29	80.74	MHz
Vertical Frequency	Frequency	Fv	94	120	122	Hz
Horizontal Frequency	Frequency	Fh	120	135.6	139.2	KHz

Notes:

(1) Display position is specific by the rise of DE signal only.
Horizontal display position is specified by the rising edge of 1st DCLK after the rise of 1st DE, is displayed on the left edge of the screen.

(2)Vertical display position is specified by the rise of DE after a “Low” level period equivalent to eight times of horizontal period. The 1st data corresponding to one horizontal line after the rise of 1st DE is displayed at the top line of screen.

(3)If a period of DE “High” is less than 1920 DCLK or less than 1080 lines, the rest of the screen displays black.

(4)The display position does not fit to the screen if a period of DE “High” and the effective data period do not synchronize with each other.

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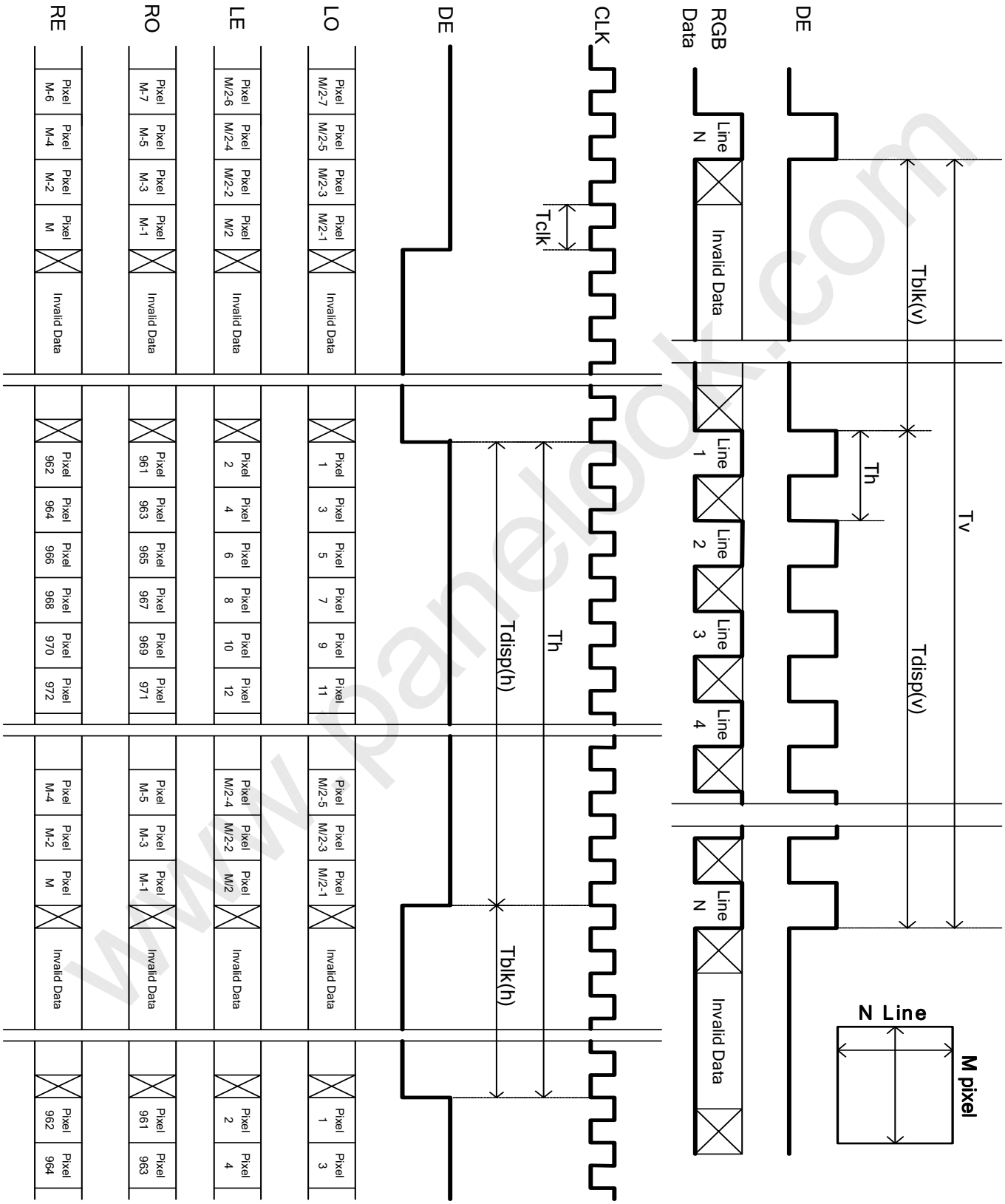
3.4 Signal Timing Waveforms for AUO Tcon Input



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3.5 Color Input Data Reference

The brightness of each primary color (red, green and blue) is based on the 10 bit gray scale data input for the color; the higher the binary input, the brighter the color. The table below provides a reference for color versus data input.

COLOR DATA REFERENCE

Color		Input Color Data																													
		RED										GREEN										BLUE									
		MSB									LSB	MSB									LSB	MSB									LSB
		R9	R8	R7	R6	R5	R4	R3	R2	R1	R0	G9	G8	G7	G6	G5	G4	G3	G2	G1	G0	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
Basic Color	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1023)	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1023)	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	Blue(1023)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
R	RED(000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(001)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	RED(1022)	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(1023)	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	GREEN(000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

	GREEN(1022)	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	GREEN(1023)	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
B	BLUE(000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE(001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

	BLUE(1022)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0
	BLUE(1023)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1

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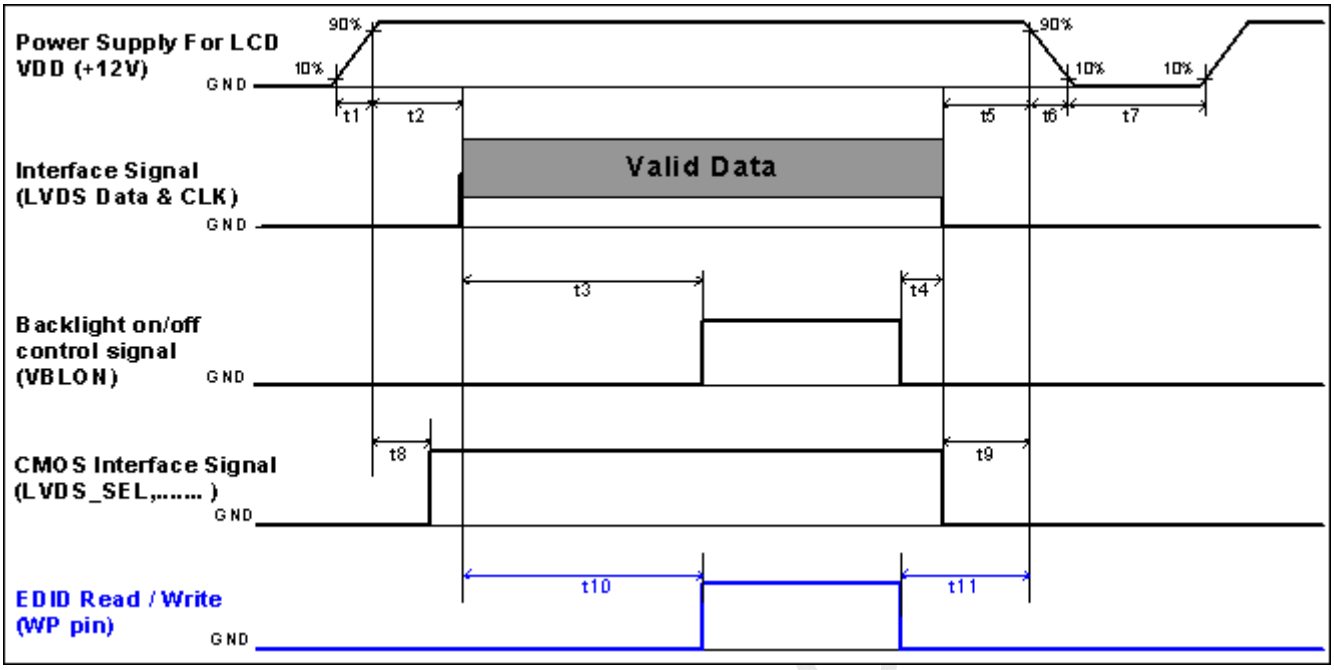
3.6 Power Sequence for LCD



T550HVN01.3"ECHO-FS" FRC Type

Parameter	Values			Unit
	Min.	Type.	Max.	
t1	0.4	---	30	ms
t2	0.1	---	**50**	ms
t3	**670**	---	---	ms
t4	0 *1	---	---	ms
t5	0	---	---	ms
t6	---	---	--- *2	ms
t7	500	---	---	ms
t8	10 *4	---	50	ms
t9	0	---	---	ms
t10	**450**	---	---	ms
t11	**150** *3	---	---	ms

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T550HVN01.6"F-LED" FRC Type

Parameter	Values			Unit
	Min.	Type.	Max.	
t1	0.4	---	30	ms
t2	0.1	---	**50**	ms
t3	**450**	---	---	ms
t4	0 *1	---	---	ms
t5	0	---	---	ms
t6	---	---	--- *2	ms
t7	500	---	---	ms
t8	10 *4	---	50	ms
t9	0	---	---	ms
t10	**450**	---	---	ms
t11	**150** *3	---	---	ms

Note:
(1) t4=0 : concern for residual pattern before BLU turn off.
(2) t6 : voltage of VDD must decay smoothly after power-off. (customer system decide this value)
(3) t11: the min value is decided by the download finish time of EDID 2Kbits.(when SCL over 30KHz)
(4) When CMOS Interface signal is N.C. (no connection), opened in Transmitted end, t8 timing spec can be negligible.

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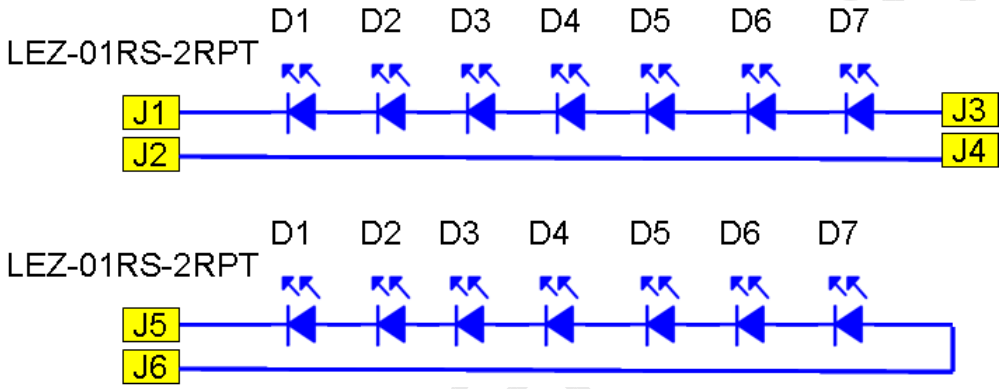
3.7 Backlight Specification

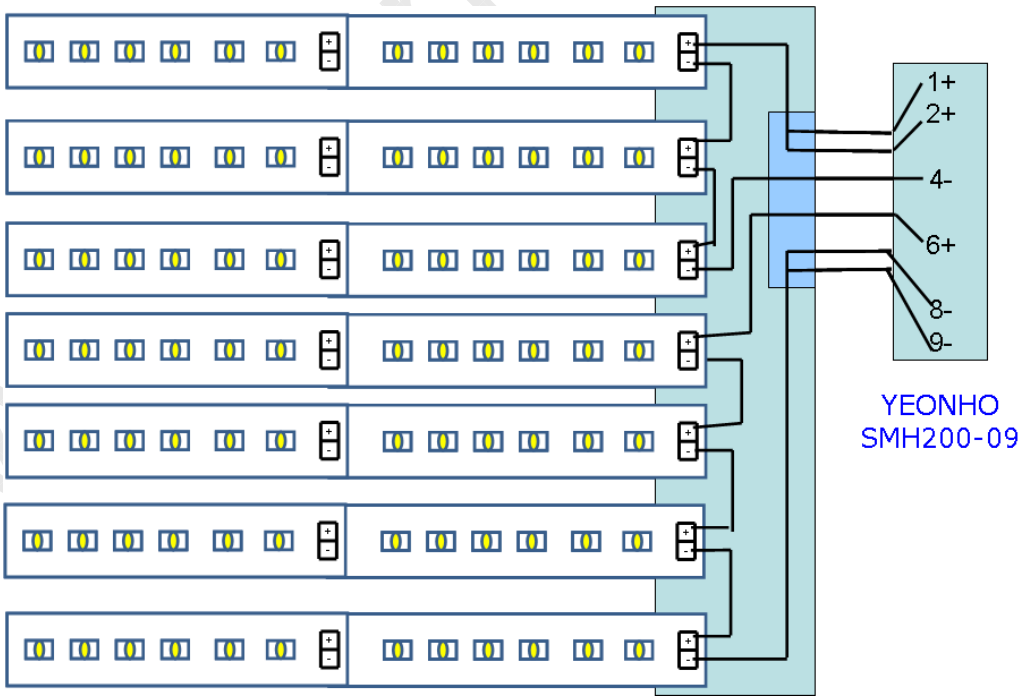
The backlight unit contains 7pcs light bar.

3.7.1 Light bar Driven Condition

No	Item	Specification					Remark
		Symbol	Min.	Typ.	Max.	Unit	
1	LED current	I_{LED}	255	260	265	mA	
2	LED Voltage	V_{LED}		Ch-1 : 142.8 Ch-2 : 190.4	Ch-1 : 157.8 Ch-2 : 210.4	V	



3.7.2 Light bar Connector Definition (Pin Assignment)



Note 1: Each LED string should be driven by independent current control/feedback circuit.

Note 2: Fuse protection should be added into LIPS circuit to have better LED driving protection.

Note 3: LED light bar and LED Backlight structure is designed by customer, BRIVIEW cannot guarantee life time and backlight power consumption.

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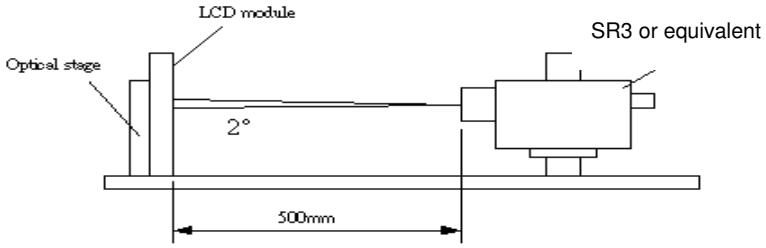
4. Optical Specification

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 45 minutes in a dark environment at 25℃. The values specified are at an approximate distance 50cm from the LCD surface at a viewing angle of φ and θ equal to 0°.

Fig.1 presents additional information concerning the measurement equipment and method.



Parameter		Symbol	Values			Unit	Notes
			Min.	Typ.	Max		
Contrast Ratio		CR	--	4000	--		1
Surface Luminance (White)		L_{WH}	--	340	--	cd/m^2	2
Luminance Variation		$\delta_{WHITE(9P)}$	68%	--	--		3
Response Time (G to G)		Tγ	--	6.5	--	ms	4
Color Coordinates							
	Red	R_X	Typ.-0.03*	0.640	Typ.+0.03*		
		R_Y		0.336			
	Green	G_X		0.299			
		G_Y		0.599			
	Blue	B_X		0.152			
		B_Y		0.043			
	White	W_X		0.274			
		W_Y		0.284			
Viewing Angle							5
	x axis, right(φ=0°)	θ_r	--	89	--	degree	
	x axis, left(φ=180°)	θ_l	--	89	--	degree	
	y axis, up(φ=90°)	θ_u	--	89	--	degree	
	y axis, down (φ=270°)	θ_d	--	89	--	degree	
Light leakage					0.2	cd/m^2	6
Gamma			1.85	2.2	2.55		L50~L255

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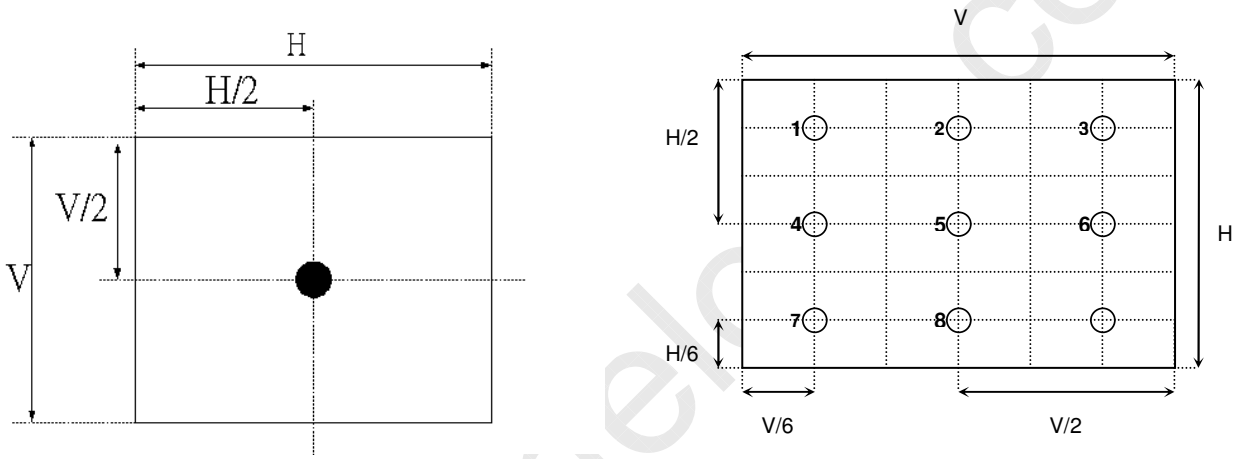
Note:

1. Contrast Ratio (CR) is defined mathematically as:

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance of } L_{on5}}{\text{Surface Luminance of } L_{off5}}$$

2. Surface luminance is luminance value at point 5 across the LCD surface 50cm from the surface with all pixels displaying white. Fro more information see FIG 2. L_{WH}=Lon5 where Lon5 is the luminance with all pixels displaying white at center 5 location.

FIG. 2 Luminance



3. The variation in surface luminance, δWHITE is defined (center of Screen) as:

$\delta_{WHITE(9P)}$= Minimum(L_{on1}, L_{on2},…,L_{on9})/ Maximum(L_{on1}, L_{on2},…L_{on9})

4. Response time T_γ is the average time required for display transition by switching the input signal for five luminance ratio (0%,25%,50%,75%,100% brightness matrix) and is based on F_v=120Hz to optimize.

Measured Response Time		Target				
		0%	25%	50%	75%	100%
Start	0%		0% to 25%	0% to 50%	0% to 75%	0% to 100%
	25%	25% to 0%		25% to 50%	25% to 75%	25% to 100%
	50%	50% to 0%	50% to 25%		50% to 75%	50% to 100%
	75%	75% to 0%	75% to 25%	75% to 50%		75% to 100%
	100%	100% to 0%	100% to 25%	100% to 50%	100% to 75%	

The response time is defined as the following figure and shall be measured by switching the input signal for “any level of gray(bright) “ and “any level of gray(dark)”.

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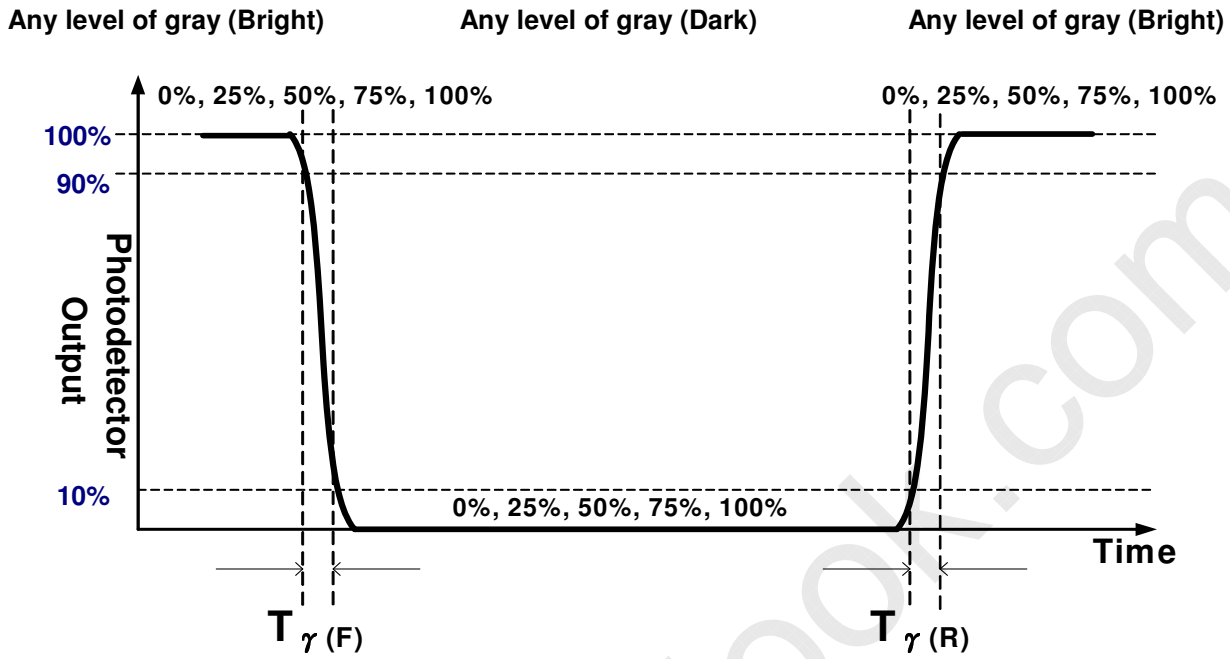
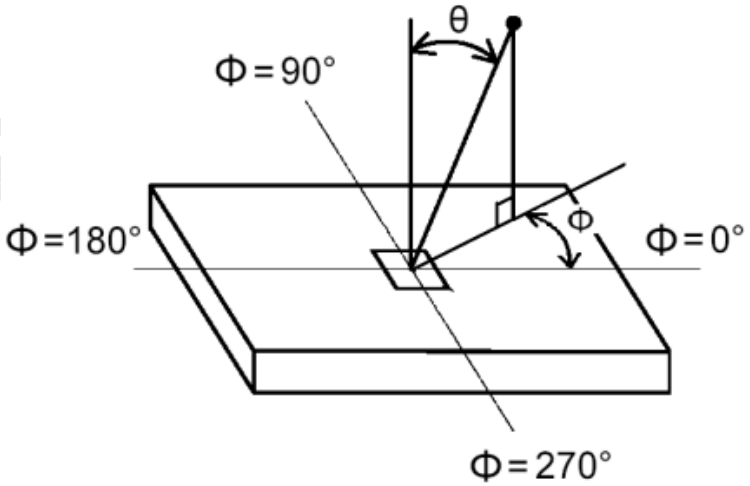
FIG.3 Response Time



5. Viewing angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG4.

FIG.4 Viewing Angle



6. Measure absolute luminance of four corners at 0 gray level shown in FIG. 5. Five measuring points each corner, total 20 points. L_{lk} is defined as Max value of total 20 points measurement value.

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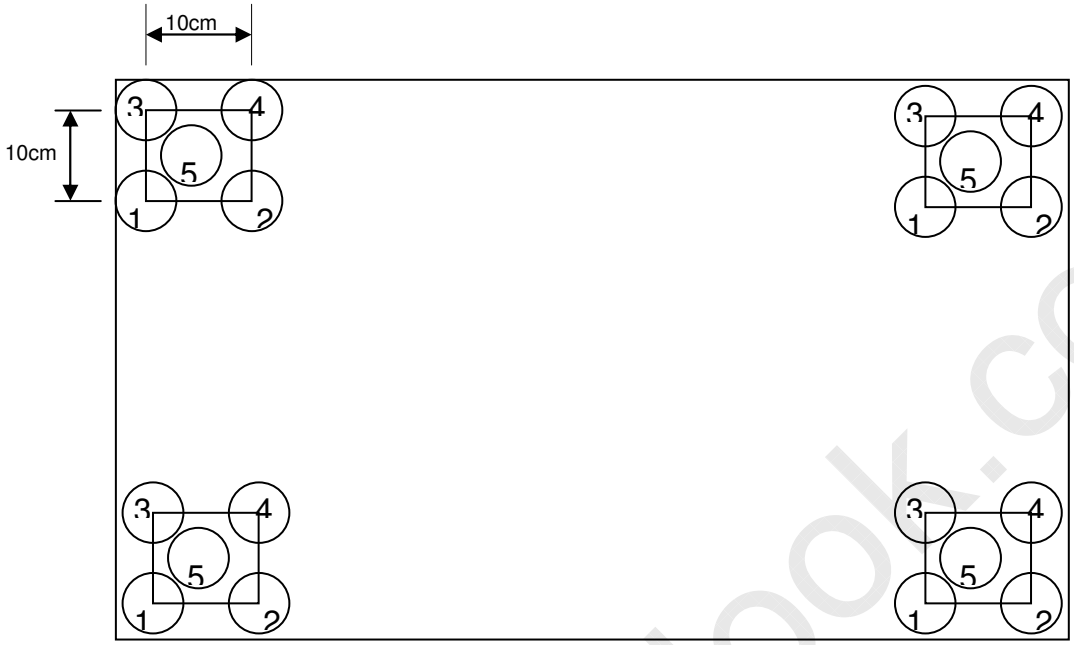
FIG.5 Light leakage measurement position



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5. Mechanical Characteristics

The contents provide general mechanical characteristics for the model T550HVN01.6. In addition the figures in the next page are detailed mechanical drawing of the LCD.

Item	Dimension				Unit	Note
		Min.	Typ.	Max.		
Outline Dimension	Horizontal	1241.4	1241.6	1242.0	mm	Refer to customers' design
	Vertical	714.7	714.9	715.2	mm	Refer to customers' design
	Depth (Dmin)	--	53.25	--	mm	Refer to customers' design
	Depth (Dmax)	--	67.95	--	mm	Refer to customers' design
Weight	12,810				g	Refer to customers' design

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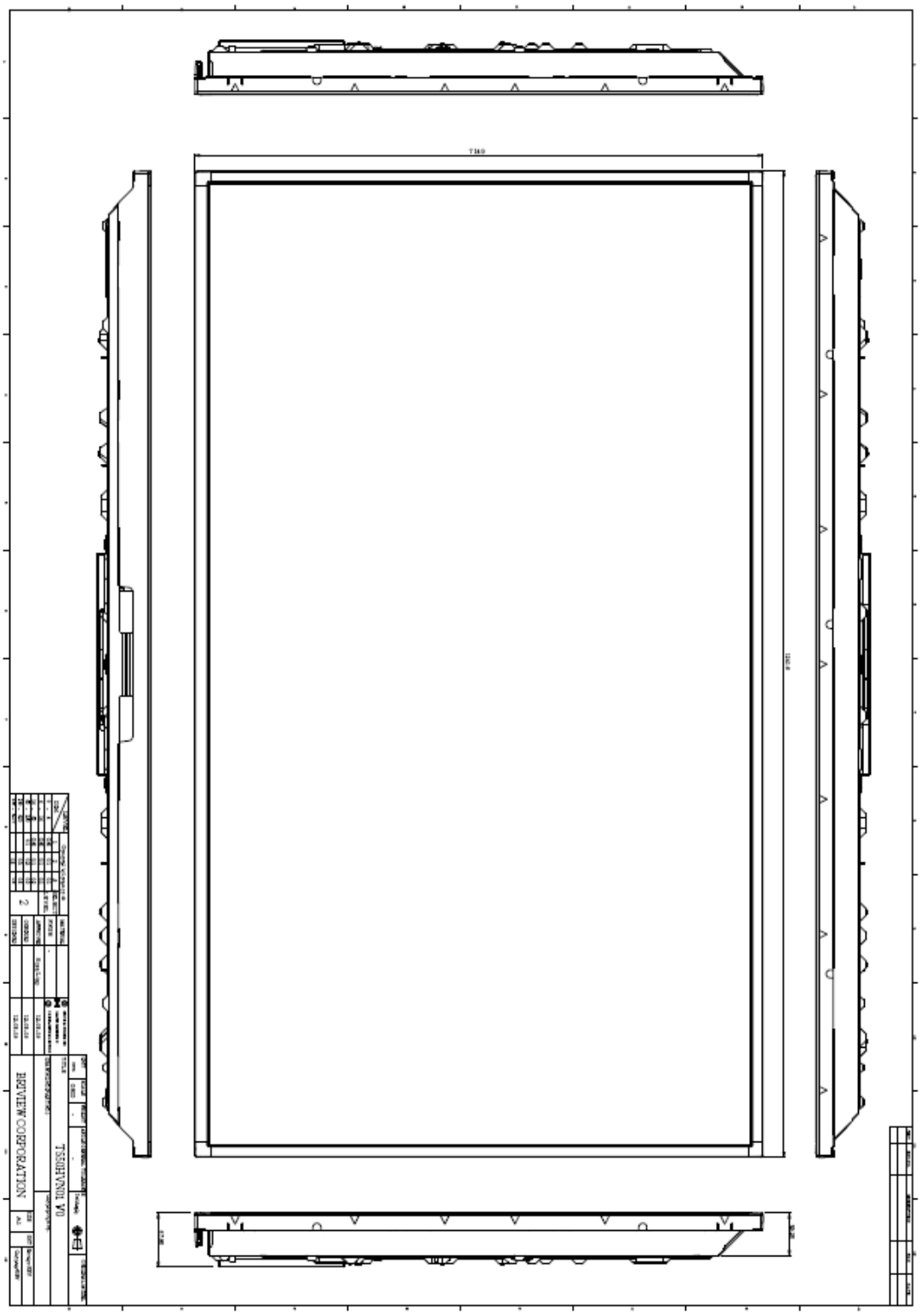
Front View



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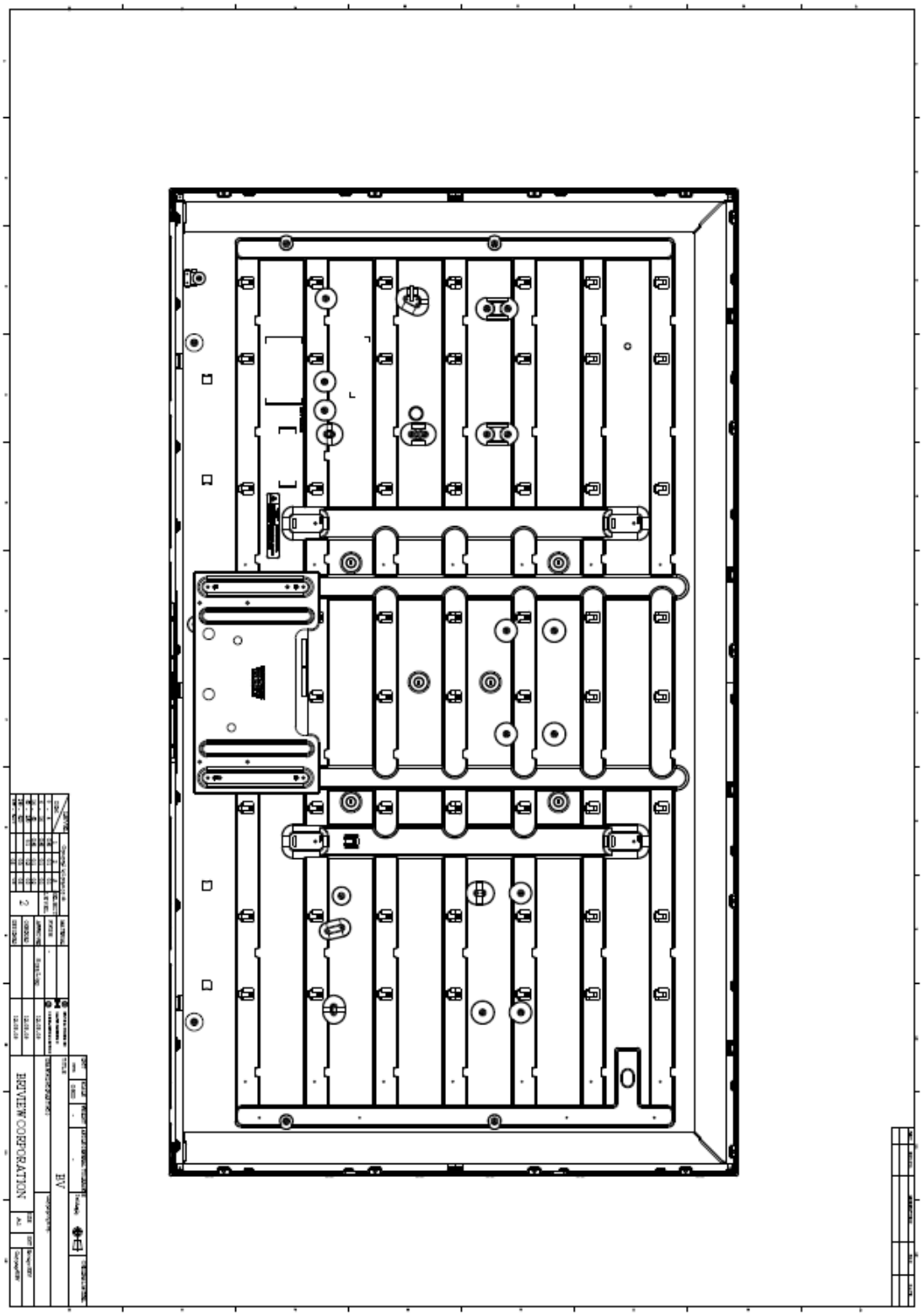
Back View



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6. Reliability Test Items

	Test Item	Q'ty	Condition
1	High temperature operation	8	50 ±5 ℃, 1000hrs, 2Pcs Continue to 2000hrs
2	Low temperature operation	4	-10℃ operation, 1000hr
3	Thermal Humidity Bias	4	50℃/80% RH,1hr On/Off,500Hr
4	Wet Humidity Temperature Storage	4	60℃/75% RH, Storage, 500hr
5	Attitude	2	.Powering up(Required): 19,700ft 25℃ 10hrs .Non-powered(Condition of Himalayas) : 44,500ft -10℃ 7hrs .Non-powered(Condition of Mexico) : 19,700ft 25℃ 9hr
6	ESD	3	Powering up non-contact/contact : ±8KV / ±15KV 40 Point 1time/Point Inverter input pin:±15kV 150 pF/330 3time/Pin
7	Pallet Vibration	1 (PKG)	EPS Condition 1.05 Grms, Random, 3~200Hz, Z axis, 1Hr EPE Condition:1.5Grms,10-200HZ,XYZ 30min each axies
8	Pallet Drop	1 (PKG)	EPS Condition :1Face(Bottom), 2 times, 20cm EPE Condition:FollowASTMDstandard,1coner,3edge 6 direction
9	Long Term image sticking	2	20 ~ 30℃ Chess-Pattern(7X5) 168hrs Fix Short term, Long term
10	Noise	2	E-aspirate: must satisfy the sound value of each band. (Max 23dB) Thermal expansion reduced sound : Max 50dB (36dB ↑ 10 times ↓)
11	Dust	2	Turning the power on/off every 10 min for 5 hr at room temp./humidity (5sec spray, 5 min drop, DUST 1.6~2.3um)
12	Pallet Storage Cycle	1 (PLLT)	-30℃~60℃ , 52hr , 1cycle, only EPS test this item. EPE don't test
13	Thermal Shock	4	-20℃,30min ~ 60℃,30min , 200cycle
14	Cleaner Spray	2	20 ~ 30℃ 168hrs
15	OLB Corrosion TEST	2	-5℃ ~ 25℃, 95%, 168hrs
16	Optical Test	3	100% White Uniformity, 5 cd/㎡(nit) Uniformity, White Color Uniformity, 10% Low Gray Uniformity, Horizontal Contrast Ratio, Horizontal Color Shift , Linearity (△x, △y), White Gamma, R,G,B Gamut , White/Black Coordinate

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7. International Standard

7.1 Safety

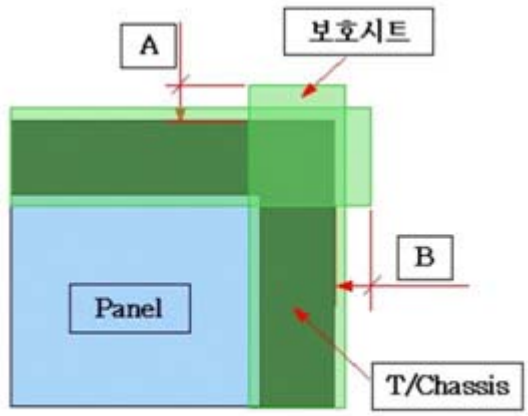
(1) UL 60065; Standard for Safety of Information Technology Equipment Including electrical Business Equipment.

(2) IEC 60065:2001 ; Standard for Safety of International Electrotechnical Commission

(3) EN 60065:2002+A1:2006; European Committee for Electrotechnical Standardization (CENELEC), EUROPEAN STANDARD for Safety of Information Technology Equipment Including Electrical Business Equipment.

(4) PTC resin information

Original Resin name: PC+ABS+GF15%	Resin Manufacturer name: SAMYANG
Resin UL file number: E121254 (Flame Grade) UL94-V1	Moler company UL code: (UL Assign Code) 210GNH15
Color : 6919A	



A~B: 1~3mm

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8. Packing

8-1 DEFINITION OF LABEL:

A. Panel Label:

Green mark description

(1) For Pb Free Product, BRIVIEW will add for identification.

(2) For RoHs compatible products, BRIVIEW will add RoHS for identification.

Note: The green Mark will be present only when the green documents have been ready by BRIVIEW internal green team. (definition of green design follows the BRIVIEW green design checklist.)

B. Carton Label:

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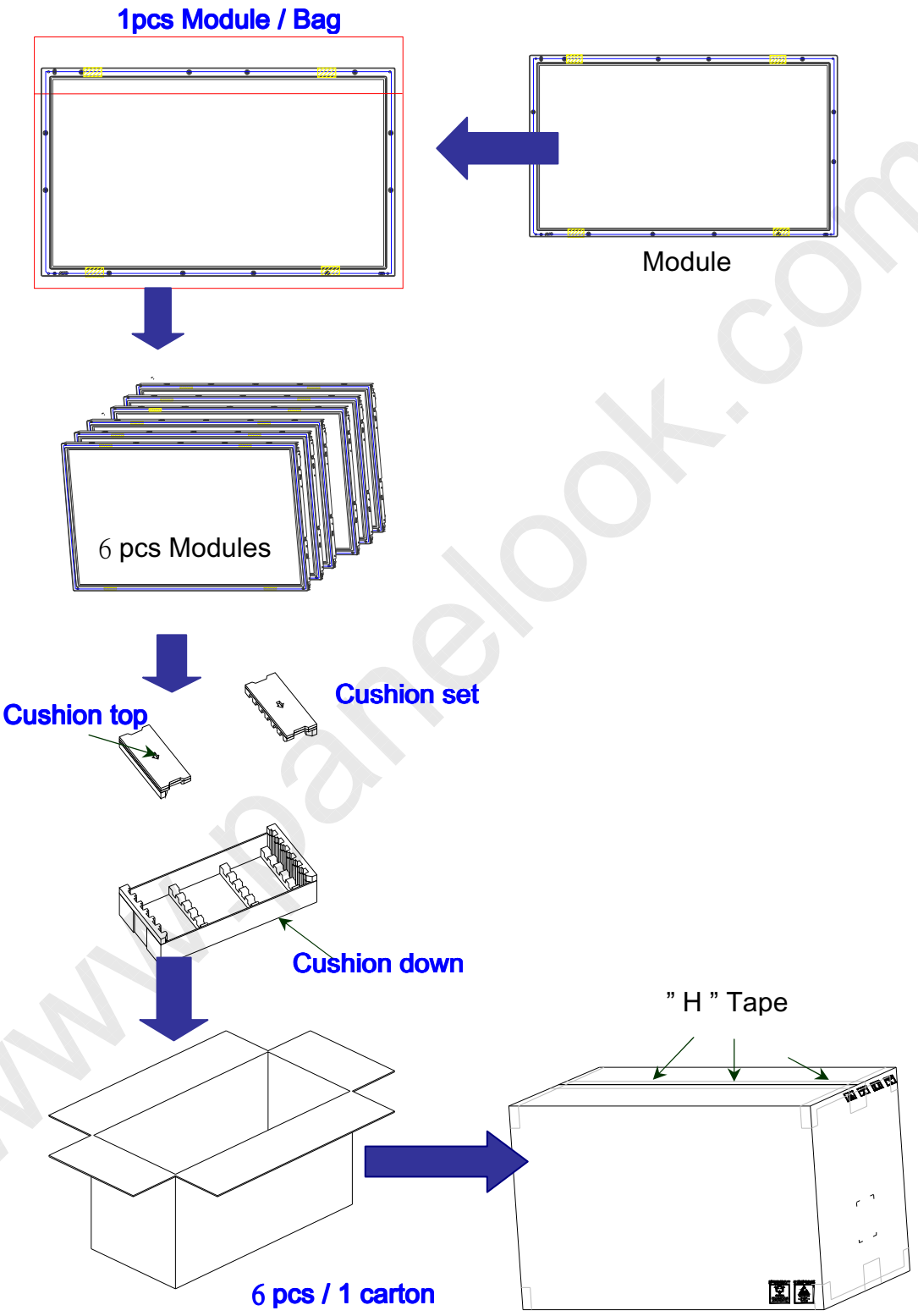
8-2 PACKING METHODS:



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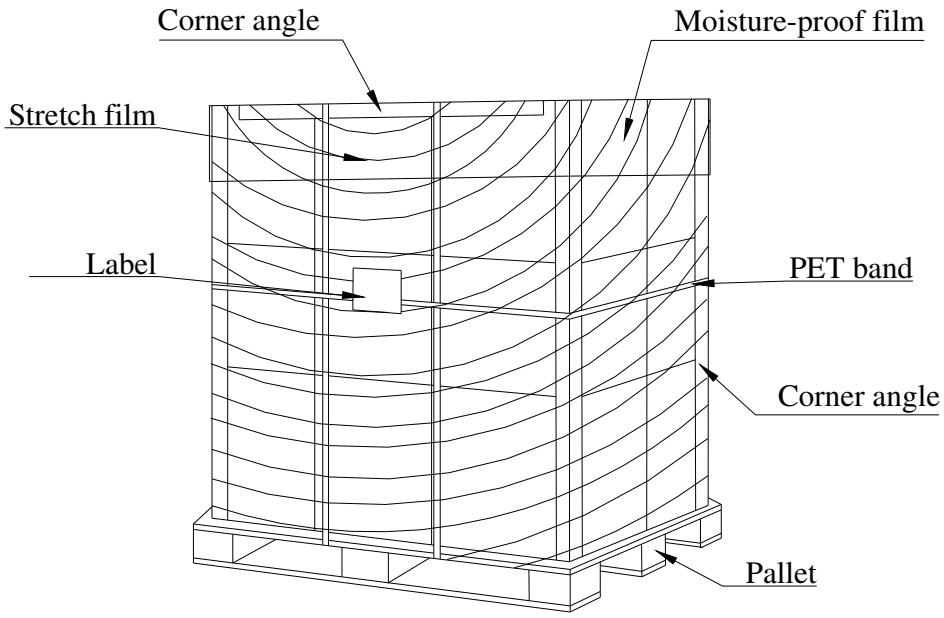
8-3 Pallet and Shipment Information

	Item	Specification			Packing Remark
		Qty.	Dimension	Weight (kg)	
1	Packing Box	6 pcs/box	1324(L)mm*555(W)mm*818(H)mm	8	
2	Pallet	1	1335(L)mm*1150(W)mm*132(H)mm	16	
3	Boxes per Pallet	2 boxes/Pallet (By Air) ; 2 Boxes/Pallet (By Sea)			
4	Panels per Pallet	12 pcs/pallet(By Air) ; 12 pcs/Pallet (By Sea)			
5	Pallet after packing	12 (by Air)	1335(L)mm*1150(W)mm*950(H)mm (by Air)	185.72(by Air)	
		24 (by Sea)	1335(L)mm*1150(W)mm*1900(H)mm (by Sea)	371.44(by Sea)	40ft HQ



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9. PRECAUTIONS

Please pay attention to the followings when you use this TFT LCD module.

9-1 MOUNTING PRECAUTIONS

(1) You must mount a module using holes arranged in four corners or four sides.

(2) You should consider the mounting structure so that uneven force (ex. twisted stress) is not applied to module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.

(3) Please attach the surface transparent protective plate to the surface in order to protect the polarizer. Transparent protective plate should have sufficient strength in order to the resist external force.

(4) You should adopt radiation structure to satisfy the temperature specification.

(5) Acetic acid type and chlorine type materials for the cover case are not desirable because the former generates corrosive gas of attacking the polarizer at high temperature and the latter cause circuit broken by electro-chemical reaction.

(6) Do not touch, push or rub the exposed polarizer with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment. Do not touch the surface of polarizer for bare hand or greasy cloth. (Some cosmetics are detrimental to the polarizer.)

(7) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaks with petroleum benzene. Normal-hexane is recommended for cleaning the adhesives used to attach front/ rear polarizer. Do not use acetone, toluene and alcohol because they cause chemical damage to the polarizer.

(8) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.

(9) Do not open the case because inside circuits do not have sufficient strength.

9-2 OPERATING PRECAUTIONS

(1) The device listed in the product specification sheets was designed and manufactured for TV application

(2) The spike noise causes the mis-operation of circuits. It should be lower than following voltage: V=±200mV(Over and under shoot voltage)

(3) Response time depends on the temperature. (In lower temperature, it becomes longer..)

(4) Brightness of CCFL depends on the temperature. (In lower temperature, it becomes lower.) And in lower temperature, response time (required time that brightness is stable after turned on) becomes longer.

(5) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.

(6) When fixed patterns are displayed for a long time, remnant image is likely to occur.

(7) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interface.

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9-3 ELECTROSTATIC DISCHARGE CONTROL

Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wristband etc. And don't touch interface pin directly.

9-4 PRECAUTIONS FOR STRONG LIGHT EXPOSURE

Strong light exposure causes degradation of polarizer and color filter.

9-5 STORAGE

When storing modules as spares for a long time, the following precautions are necessary.

(1) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5℃ and 35℃ at normal humidity.

(2) The polarizer surface should not come in contact with any other object. It is recommended that they be stored in the container in which they were shipped.

9-6 HANDLING PRECAUTIONS FOR PROTECTION FILM

(1) The protection film is attached to the bezel with a small masking tape. When the protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion-blown equipment or in such a condition, etc.

(2) When the module with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the bezel after the protection film is peeled off.

(3) You can remove the glue easily. When the glue remains on the bezel or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane.

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